

ABSTRACT OF THE INVENTION

The present invention offers novel equilibration methods for very high resolution, three-dimensional imaging of imaging of lung compliance and distribution of functional residual capacity (FRC) in the lung using hyperpolarized helium-3 (^3He) gas (H^3He), and collecting local magnetic resonance image data therefrom. Using the present methods permits many functions that have been performed on a regional level for the whole lung using non-polarized helium, to be calculated for the first time from the local MRI measurements of local H^3He , such as measuring volume or compliance.

[illegible]